



**Draft for USEPA and MDNRE Review**

Mr. Samuel Borries  
USEPA Region 5  
77 West Jackson Boulevard (SE-5J)  
Chicago, IL 60604-3507

Subject:

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site  
Time-Critical Removal Action – Former Plainwell Impoundment  
Discontinuation of Groundwater Monitoring Program

Dear Mr. Borries:

Four quarters of groundwater data are now available for the former Plainwell Impoundment. The analytical results from the most recent round of sampling – conducted in December 2009 – were all non-detect for polychlorinated biphenyls (PCBs).

As described in our December 9, 2009 letter titled *Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site Time-Critical Removal Action – Former Plainwell Impoundment 2009 Q1-3 Groundwater Sampling Results* (Garbaciak 2009), now that four quarters of PCB groundwater data are available – a total of 82 samples, all of which were non-detect for PCBs – ARCADIS is requesting United States Environmental Protection Agency (USEPA) approval to discontinue groundwater sampling in the former Plainwell Impoundment and permanently abandon all 15 monitoring wells according to applicable standards of the Michigan Department of Natural Resources and Environment (MDNRE). Information to support USEPA's consideration of this request – including details of the installation, approach, and results available from the first three quarters of sampling – are described in the December 9, 2009 letter (Garbaciak 2009), and the results of the fourth sampling event are summarized below.

**Background**

Georgia-Pacific LLC installed a network of 15 groundwater monitoring wells and five staff gauges in the former Plainwell Impoundment in accordance with the approved *Former Plainwell Impoundment Time-Critical Removal Action Design Report* (TCRA Design Report; ARCADIS BBL 2007a) and the *Supplemental Remedial Investigation/Feasibility Study Work Plan – Morrow Dam to Plainwell Dam* (Area 1 SRI/FS Work Plan; ARCADIS BBL 2007b). Quarterly monitoring and sampling events were carried out in April, June, September, and December 2009. A description of the installation of the well network and staff gauges, the goals of the groundwater investigation, the monitoring approach, and the first three quarters



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monitoring and sampling data were included in the December 9, 2009 letter (Garbaciak 2009). Results from the fourth quarter sampling event are described below.

### December 2009 Sampling Results

Prior to the sampling event, groundwater and surface water elevations were monitored for a period of two weeks to verify the direction of water flow. The data confirmed flow was toward the river. Data from the December 2009 sampling event are tabulated in Tables 1 and 2.

Groundwater and surface water samples were collected during the week of December 14, 2009. Groundwater samples were collected using ultra-low flow sampling techniques. Surface water samples were collected from the river near Staff Gauge 5 (SG-5, see Figure 1) on the first day and last day of groundwater sampling activities. Sampling logs are included in Attachment 1.

ARCADIS collected a total of 15 groundwater samples (excluding duplicate samples) during the December 2009 sampling event. All samples were submitted to Test America Labs in Burlington, Vermont for the following analyses (sample analytical methods to be consistent with the *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Revision 1* [Multi-Area QAPP, ARCADIS 2009]):

- Total PCBs by Aroclor
- Total Organic Carbon
- Total Dissolved Solids and Total Suspended Solids
- Chloride, Sulfate, Alkalinity, Sodium, Potassium, Magnesium, and Calcium

Consistent with the Multi-Area QAPP, one blind duplicate sample was collected for every 10 samples of each sample matrix for all analytical parameters, and one matrix spike/matrix spike duplicate sample was collected for every 20 samples analyzed for PCBs.

The Michigan Department of Environmental Quality (MDEQ, now part of the Michigan Department of Natural Resources and Environment [MDNRE]) also collected seven split samples – these samples were submitted to Northeast Analytical Labs in Detroit, Michigan for PCB analysis. MDEQ samples were not analyzed for inorganic constituents. MDEQ's laboratory-validated split sample PCB results were sent to ARCADIS on January 19, 2010 (Santini 2010).





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January 25, 2010

PCBs were not detected in any of the December 2009 groundwater samples collected by ARCADIS or MDEQ at quantitation limits ranging from 0.025 micrograms per liter ( $\mu\text{g/L}$ ) for Northeast Analytical Labs to 0.047 to 0.051  $\mu\text{g/L}$  for Test America Labs.

PCB analytical results for all samples (including MDEQ's split samples) collected during the December 2009 sampling event are summarized in Table 3, and analytical results for inorganic constituents are summarized in Table 4. Full validation packages for the samples collected by ARCADIS are included in Attachment 2, and copies of analytical reports for MDEQ samples are included in Attachment 3.

#### **Request to Discontinue Sampling**

As described in the TCRA Design Report and Area 1 SRI/FS Work Plan, the groundwater monitoring program was designed to include eight quarterly sampling events over a two-year period.

Four of the quarterly sampling events are now complete. We believe these results indicate that PCBs are not present in groundwater, and that it is reasonable to conclude that PCBs are not of concern in groundwater in the former Plainwell Impoundment. Pursuant to Section 27 Paragraph 75 of the Administrative Settlement Agreement and Order on Consent for Removal Action, we formally request USEPA approval to discontinue groundwater sampling at all wells in the former Plainwell Impoundment and permanently abandon the monitoring wells according to applicable State of Michigan standards. Please contact Doug Cowin (312.332.4937 x 11) or me if you would like to discuss this issue further.

Sincerely,

ARCADIS

Stephen Garbaciak Jr., P.E.  
Vice President

Enclosures



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Copies:

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## Tables

- Table 1 – December 2009 Groundwater and Surface Water Readings
- Table 2 – December 2009 Groundwater and Surface Water Elevations
- Table 3 – Summary of PCB Samples Collected and Data Received for December 2009 Sampling Event
- Table 4 – Summary of Inorganic Samples Collected and Data Received for December 2009 Sampling Event

## Figure

- Figure 1 – Groundwater Monitoring Well Location Map

## Attachments (electronic only – included on attached CD)

- Attachment 1 – December 2009 Groundwater and Surface Water Sampling Logs
- Attachment 2 – December 2009 Validation Packages
- Attachment 3 – December 2009 Analytical Reports for MDEQ Split Samples

## References

- ARCADIS BBL. 2007a. *Former Plainwell Impoundment Time-Critical Removal Action Design Report*. February 2007.
- ARCADIS BBL. 2007b. *Supplemental Remedial Investigation/Feasibility Study Work Plan – Morrow Dam to Plainwell (Area 1 SRI/FS Work Plan)*. February 2007.
- ARCADIS. 2009. *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Revision 1*. November 2009.
- Garbaciak, S. 2009. Letter from Stephen Garbaciak Jr., P.E. (ARCADIS) to Samuel Borries (USEPA), Paul Bucholtz (MDEQ), and Sharon Hanshue (MDNR) re: *Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site Time-Critical Removal Action – Former Plainwell Impoundment 2009 Q1-3 Groundwater Sampling Results*. December 9, 2009.
- Santini, A. 2010. Electronic transmittal of Plainwell TCRA oversight PCB analytical results for groundwater samples collected in December 2009 from Drew Santini, Camp Dresser McKee to Doug Cowin, ARCADIS. January 19, 2010.

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Tables

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Former Plainwell Impoundment TCRA  
Quarterly Post-Construction Groundwater Monitoring - Quarter 4

**Table 1 – December 2009 Groundwater and Surface Water Readings**

Location	Coordinates <sup>1</sup>		Reference Elevation <sup>(2a)</sup>	Staff/Gage Water Elevations/Monitoring Well Depth to Water <sup>(3)</sup>			
	Northing	Easting		12.01.09	12.03.09	12.07.09	12.09.09
Staff Gages							
SG-1	350394.4	12775769.3	-	707.03	707.10	707.15	707.24
SG-2	350979.9	12772024.3	-	700.15	700.22	700.27	700.34
SG-3	350360.5	12772101.6	-	-	-	-	-
SG-4	350988.8	12772385.0	-	700.50	700.55	700.58	700.62
SG-5	350076.1	12773475.4	-	702.08	702.15	702.17	702.20
Monitoring Wells							
MW-1	350961.38	12772432.61	708.92	8.12	8.12	8.10	8.05
MW-2	350711.55	12772517.19	712.32	11.33	11.32	11.31	11.26
MW-3	350339.20	12772701.62	711.66	10.21	10.20	10.19	10.14
MW-4	350154.43	12773098.22	713.54	11.61	11.61	11.59	11.54
MW-5	350154.29	12773466.74	713.69	11.42	11.40	11.39	11.35
MW-6	350846.49	12772491.10	712.07	11.21	11.20	11.19	11.19
MW-7	350555.17	12772534.59	712.85	11.65	11.65	11.63	11.59
MW-8	350171.40	12772825.18	711.85	10.27	10.26	10.25	10.20
MW-9	350900.48	12773169.10	717.09	15.11	15.11	15.09	15.08
MW-10	350302.97	12774069.99	712.72	8.96	8.95	8.95	8.85
MW-11	350789.24	12774553.73	712.38	7.98	7.97	7.96	7.90
MW-12	350726.89	12775210.90	715.35	9.75	9.74	9.74	9.60
MW-13	350420.23	12774429.71	714.36	9.71	9.70	9.71	9.63
MW-14	350664.31	12774948.40	712.45	7.43	7.43	7.43	7.35
MW-15	350412.99	12774893.18	713.83	8.55	8.54	8.55	8.45

**Notes:**

<sup>1</sup> Coordinates are based on the North American Datum of 1983, Michigan South Zone.

<sup>2</sup> Water elevations at staff gages are based on the National Geodetic Vertical Datum of 1929.

<sup>3</sup> Monitoring well depth to groundwater measured in feet. Elevation of the top of the well's inner casing was used as reference.



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Table 2 – December 2009 Groundwater and Surface Water Elevations

Location	Water Level Elevation / Date			
	12.01.09	12.03.09	12.07.09	12.09.09
<b>Staff Gages</b>				
SG-1	707.03	707.10	707.15	707.24
SG-2	700.15	700.22	700.27	700.34
SG-3 <sup>1</sup>	-	-	-	-
SG-4	700.50	700.55	700.58	700.62
SG-5	702.08	702.15	702.17	702.20
<b>Monitoring Wells</b>				
MW-1	700.80	700.80	700.82	700.87
MW-2	700.99	701.00	701.01	701.06
MW-3	701.45	701.46	701.47	701.52
MW-4	701.93	701.93	701.95	702.00
MW-5	702.27	702.29	702.30	702.34
MW-6	700.86	700.87	700.88	700.88
MW-7	701.20	701.20	701.22	701.26
MW-8	701.58	701.59	701.60	701.65
MW-9	701.98	701.98	702.00	702.01
MW-10	703.76	703.77	703.77	703.87
MW-11	704.40	704.41	704.42	704.48
MW-12	705.60	705.61	705.61	705.75
MW-13	704.65	704.66	704.65	704.73
MW-14	705.02	705.02	705.02	705.10
MW-15	705.28	705.29	705.28	705.38
<b>Groundwater - Surface Water Gradients (ft/ft) (positive gradient indicates groundwater flow to river)</b>				
MW-5 - SG-5	0.19	0.14	0.13	0.14
MW-1 - SG-4	0.30	0.25	0.24	0.25

**Notes:**

<sup>1</sup> Staff gauge SG-3 was not read during the December 2009 sampling event because ARCADIS did not have access to the private property where SG-3 is located.



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**Table 3 — Summary of PCB Samples Collected and Data Received for December 2009 Sampling Event**

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration							
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCB
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Groundwater Surface Water Interface Criteria & RBSLs <sup>1</sup>										
			NA	NA	NA	NA	NA	NA	NA	0.2
Groundwater Samples <sup>2</sup>										
MW-1	12/18/2009	TS40066	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	12/18/2009	PGW-MW1-01 <sup>3</sup>	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-2	12/17/2009	TS40064	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-3	12/17/2009	TS40060 [TS40061] <sup>4</sup>	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]
	12/17/2009	PGW-MW2-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-4	12/16/2009	TS40058	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-5	12/16/2009	TS40057	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
MW-6	12/17/2009	TS40065	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	12/17/2009	PGW-MW6-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-7	12/17/2009	TS40062 [TS40063]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]
MW-8	12/16/2009	TS40059	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-9	12/18/2009	TS40067	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U
MW-10	12/16/2009	TS40056	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	12/16/2009	PGW-MW10-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	12/16/2009	PGW-MW10-02	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-11	12/15/2009	TS40053	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-12	12/14/2009	TS40051	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	12/14/2009	PGW-MW12-01	0.0255 U	0.0255 U	0.0255 U	0.0255 U	0.0255 U	0.0255 U	0.0255 U	0.0255 U
MW-13	12/15/2009	TS40054	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
MW-14	12/14/2009	TS40052	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
MW-15	12/15/2009	TS40055	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U
Surface Water Samples <sup>2</sup>										
SG-5	12/14/2009	TS31009 [TS31010]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]
	12/18/2009	TS31011	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U

**Notes:**

<sup>1</sup> Analytical results compared to applicable Part 201 generic Groundwater-Surface Water Interface criteria and Part 213 RBSLs provided in MDEQ's RRD Operational Memorandum No. 1 (Table 1, Column #3).

<sup>2</sup> Samples collected by ARCADIS analyzed by Test America Laboratory.

<sup>3</sup> MDEQ split samples shown in italics. Samples analyzed by NEA.

<sup>4</sup> Duplicate samples are shown in brackets.

MDEQ collected a trip blank (PGW-MW20-01) that was analyzed by NEA. This was not a split sample; therefore, it does not appear in the table above. Analytical results for this trip blank are reported in the analytical package associated with MDEQ's samples, included as Attachment 3.

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

U - Compound analyzed but not detected at a concentration above the reporting limit.

MDEQ - Michigan Department of Environmental Quality

MW - Monitoring Well

NEA - Northeastern Analytical Labs

PCB - Polychlorinated Biphenyl

RBSL - Risk Based Screening Level

RRD - Remediation Redevelopment Division

SG - Staff Gauge

µg/L - microgram per liter

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**Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site**  
**Former Plainwell Impoundment TCRA**  
**Quarterly Post-Construction Groundwater Monitoring - Quarter 4**

**Table 4 — Summary of Inorganic Samples Collected and Data Received in December 2009**

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration									
			Calcium	Magnesium	Potassium	Sodium	Alkalinity	Chloride	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
			µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Groundwater Samples <sup>1</sup>												
MW-1	12/18/2009	TS40066	348,000	121,000	5,050	48,800	320	51	910	1,870	8.1	34.2
MW-2	12/17/2009	TS40064	153,000	30,200	1,770 B	72,200	330	140	120	708	4.9	21.5
MW-3	12/17/2009	TS40060 [TS40061] <sup>2</sup>	136,000 [134,000]	31,700 [31,300]	1,930 B [1,980 B]	72,600 [71,100]	330 [320]	120 [130]	81 [89]	678 [686]	3.6 [3.8]	12.9 [13.9]
MW-4	12/16/2009	TS40058	170,000	40,800	2,080 B	82,800	320	130	230	883	4	16.8
MW-5	12/16/2009	TS40057	197,000	44,400	3,310 B	66,300	390	86	200	884	6.9	15.7
MW-6	12/17/2009	TS40065	118,000	24,400	1,530 B	72,600	270	130	75	577	3.9	16.1
MW-7	12/17/2009	TS40062 [TS40063]	135,000 [142,000]	29,600 [31,200]	1,590 B [1,670 B]	72,800 [76,900]	300 [300]	140 [140]	96 [97]	697 [691]	3.8 [4]	14.8 [14.9]
MW-8	12/16/2009	TS40059	108,000	27,300	1,810 B	63,200	270	160	56	630	1.6	8.9
MW-9	12/18/2009	TS40067	83,400	21,900	1,830 B	72,600	260	94	43	458	2.2	4.3
MW-10	12/16/2009	TS40063	221,000	26,900	1,300 B	46,900	400	71	180	856	16.8	14.5
MW-11	12/16/2009	TS40056	109,800	23,600	1,840 B	48,800	280	64	155	479	2.5	13.6
MW-12	12/14/2009	TS40051	225,000	48,900	6,650	35,800	470	14	107	872	31.3	0.7
MW-13	12/15/2009	TS40054	108,000	25,700	1,760 B	75,700	280	110	25	447	2.4	15.2
MW-14	12/14/2009	TS40052	154,000	36,000	892 B	41,800	240	60	460	691	2.6	17.8
MW-15	12/15/2009	TS40055	91,300	23,200	2,430 B	62,500	280	63	42	421	1.4	8.2
Surface Water Samples <sup>3</sup>												
SG-5	12/14/2009	TS31009 [TS31010]	80,100 [87,000]	25,600 [24,800]	2,240 B [2,220 B]	40,000 [38,500]	230 [230]	58 [69]	29 [34]	411 [399]	4.5 [4.6]	5.5 [5]
	12/18/2009	TS31011	86,600	24,400	2,130 B	35,000	230	61	36 J	402	5.4	5

**Notes:**

<sup>1</sup> All samples analyzed by Test America Laboratory.  
<sup>2</sup> Duplicate samples are shown in brackets.

B - Indicates an estimated value between the instrument detection limit and the Reporting Limit (RL).

J - The compound was positively identified, however, the associated numerical value is an estimated concentration only.

MW - Monitoring well

SG - Staff Gauge

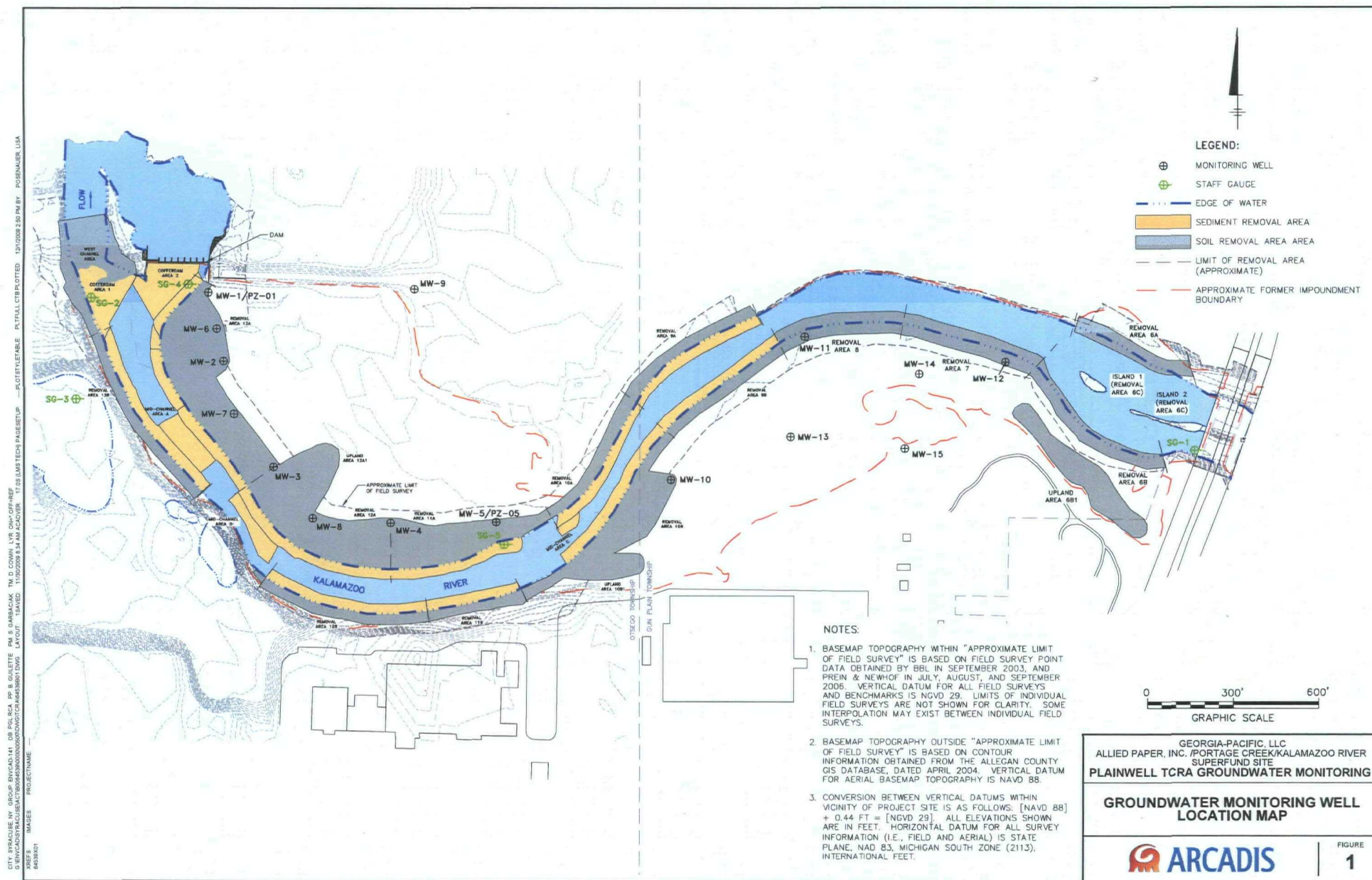
µg/L - milligram per liter

µg/L - microgram per liter

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Figure







**ARCADIS**

**Attachments  
(electronic only included on  
attached CD)**

Attachment 1: December 2009  
Groundwater and Surface Water  
Sampling Logs

Attachment 2: December 2009  
Validation Packages

Attachment 3: December 2009  
Analytical Reports for MDEQ Split  
Samples